

REMARKS

At the time of the Office Action dated January 15, 2003, claims 1-20 were pending in this application. Of those claims, claims 1-11 have been rejected and claims 12-20 have been withdrawn from consideration pursuant to the provisions of 37 C.F.R. § 1.142(b). Claim 1 has been amended to recite that a first insulating film is in contact with a semiconductor substrate, consistent with the paragraph spanning pages 10 and 11 of Applicants' originally-filed disclosure. Claim 2 has been cancelled. Claims 5-7 have been amended to be placed in independent form. Claim 6 has also been amended to recite that the thickness of a second insulating film on the top surface of a gate electrode is greater than the thickness of the second insulating film on the surface of a semiconductor substrate, consistent with page 16 of the disclosure. Applicants submit that the present Amendment does not generate any new matter issue.

Claim 2 is objected under 37 C.F.R. § 1.75(c)

Claim 2 has been cancelled. As such, the Examiner's objection to claim 2 is moot.

Claims 1-11 are rejected under the second paragraph of 35 U.S.C. § 112

On the second page of the statement of the rejection, the Examiner asserted that the use of the word "substantially" in claims 1 and 7 renders the claimed invention indefinite. This basis for the rejection is respectfully but vigorously traversed.

Applicants incorporate herein the arguments previously presented in the Amendment filed October 22, 2002, regarding this issue. On page five of the Office Action, the Examiner responded by asserting:

Regarding "substantially", applicant [sic] argues that such language is employed so that the thickness recited is not uniform to the nth degree. Nonetheless, such meaning is not characterized from the original disclosure. It remains that the degree of variation cannot be determined from the specification.

The issue of whether the term "substantially" is indefinite was recently revisited by the Federal Circuit in Verve, LLC v. Crane Cams, Inc., Case No. 01-1417 (Fed. Cir. November 14, 2002). The case was brought on appeal before the Federal Circuit after the district court determined the expression "substantially constant wall thickness" was indefinite for lack in the specification or prosecution history of "a sufficiently clear definition of 'substantially'." The Federal Circuit, however, disapproved of the district court's analysis that the term "substantially" was indefinite because it was not further defined in the specification. As stated by the Federal Circuit:

Patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field.

The Federal Circuit then relied upon previous case law, which described "substantially" as "a descriptive term commonly used in patent claims 'to avoid a strict numerical boundary to the specified parameter.'" The Federal Circuit concluded with regard to the indefiniteness issue by holding:

It is well establish that when the term "substantially" serves reasonably to describe the subject matter so that its scope would be understood by persons in the field of the invention, and to distinguish the claimed subject matter from the prior art, it is not indefinite. (emphasis added)

It is readily apparent that the Examiner has engaged in the same type of analysis disapproved of by the Federal Circuit by asserting that the "degree of variation cannot be determined from the specification." The Federal Circuit has clearly stated that the test for indefiniteness does not involve determining whether a particular term has been comprehensively defined in the specification. Instead, the test involves determining whether that term would have been readily understood by one having ordinary skill in the art. In this regard, the Federal Circuit has determined that the term "substantially" is not indefinite.

It should, therefore, be apparent that one having ordinary skill in the art would not have difficulty understanding the scope of the claimed invention, particularly when reasonably interpreted in light of the specification. Thus, Applicants respectfully submit that the imposed rejection of the claims under the second paragraph of 35 U.S.C. 112 is not legally viable and, hence, solicit withdrawal thereof.

Claims 1-7 are rejected under 35 U.S.C. § 103 for obviousness based upon
Akamatsu et al., U.S. Patent No. 6,180,472 (hereinafter Akamatsu)

On page three of the statement of the rejection, the Examiner asserted that one having ordinary skill in the art would have been motivated to arrive at the claimed invention. This rejection is respectfully traversed.

Applicants note that claim 1 has been amended to recite that a first insulating film is in contact with a semiconductor substrate. In the statement of the rejection that Examiner asserted that feature 15 of Akamatsu corresponds to the claimed first insulating film, and although the Examiner

failed to identify that claimed semiconductor substrate, it is apparent that Akamatsu uses reference numeral 1 to indicate a "Si substrate" (column 5, lines 67). Given this interpretation of the claim language recited in claim 1, Akamatsu fails to teach or suggest that a first insulating film is in contact with a semiconductor substrate, as the Akamatsu clearly teaches that a gate insulating film 2 is formed between the Si Substrate 2 and the first sidewall 15.

With regard to claims 4-7, the Examiner asserted:

Regarding the respective thicknesses in claims 4-7, such would have been within the purview of one skilled in the art and would have been met as shown in the figures delineated above, and the corresponding description, e.g., column 6 lines 29-34, including e.g., the lateral thickness corresponds to the thickness of the layer 16, hence that of the spacer 16(a) as shown, and as delineated at column 6 lines 3-40 including the respective insulating thickness including expected slight variance due to the vertical sidewalls and the horizontal, flat surface of the gate and the surface of the source/drain regions.

In short, the Examiner has referred to a passage in Akamatsu that teaches that the non-doped oxide film 15 has a thickness of 10 to 20 nm and the doped oxide film 16 has a thickness of 40 to 60 nm. The Examiner also referred to Figures that are not described in Akamatsu as being drawn to scale so as to show actual proportions. On this basis, the Examiner concluded that it "would have been within the purview of one skilled in the art" to arrive at the claimed limitations.

It has been repeatedly held by the Federal Circuit that in order to establish the requisite motivation to modify a particular reference, the Examiner must make "clear and particular" factual findings, not generalizations, as to a specific understanding or specific technological principle which would have realistically impelled one having ordinary skill in the art to modify a particular prior art reference to arrive at the claimed invention.² In so doing, the Examiner must provide facts and explain why one having ordinary skill in the art would have been realistically

motivated to modify the thicknesses of the oxide films 15, 16 of Akamatsu to arrive at the claimed invention.³ That burden, however, has not been discharged, as the Examiner's statement that it "would have been within the purview of one skilled in the art" to arrive at the claimed limitation is nothing more than a generalization.

To clarify the limitations regarding claims 5-7, Applicants refer the Examiner to Fig. 2 of Applicants' disclosure and the following:

Ta = the thickness of the second insulating film on the top surface of the gate electrode;
Tb = the thickness of the second insulating film on the sidewall of the gate electrode;
Tc = the thickness of the second insulating film on the surface of the semiconductor substrate;

Td = the thickness of the first insulating film at the side of the gate electrode; and

Tsw = the lateral length of the first insulating film.

Thus, claim 5 recites that $(Tb < Ta)$ and $(Tb < Tc)$;

claim 6 recites that $(Tc < Ta)$; and

claim 7 recites that $Tsw = Tb + Td$.

None of these limitations are taught or suggested by Akamatsu. Furthermore Akamatsu fails to recognize these relationships. Instead, Akamatsu merely teaches the general thickness for doped and non-doped oxide films 15, 16. As such, one having ordinary skill in the art would not have considered that the claimed invention, as recited in claims 1 and 3-7, is obvious under 35 U.S.C. § 103 based upon Akamatsu.

² Ruiz v. A.B. Chance Co., 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); Ecolochem Inc. v. Southern California Edison, Co., 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); In re Kotzab, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999).

³ Ecolochem Inc. v. Southern California Edison, Co., *supra.*; In re Rouffet, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998).

Claim 8 is rejected under 35 U.S.C. § 103 for obviousness based upon Akamatsu in view of JP 11-274300 (hereinafter Otani)

On pages three and four of the Office Action, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Akamatsu in view of Otani to arrive at the claimed invention. This rejection is respectfully traversed.

Claim 8 depends ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 103 for obviousness based upon Akamatsu. Specifically, Akamatsu fails to teach or suggest that a first insulating film is in contact with a semiconductor substrate, as recited in claim 1. The secondary reference to Otani does not cure the argued deficiencies of Akamatsu. Accordingly, the proposed combination of references would not yield the claimed invention. Applicants, therefore, respectfully submit that the imposed rejection of claim 8 under 35 U.S.C. § 103 for obviousness based upon Akamatsu in view of Otani is not viable and, hence, solicit withdrawal thereof.

Claims 9 and 11 are rejected under 35 U.S.C. § 103 for obviousness based upon Akamatsu in view of Ohno, U.S. Patent No. 5,621,232

On page four of the Office Action, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Akamatsu in view of Ohno to arrive at the claimed invention. This rejection is respectfully traversed.

Claims 9 and 11 depend ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 103 for obviousness based upon Akamatsu. Specifically, Akamatsu fails to teach or suggest that a first insulating film is in contact with a semiconductor substrate, as recited in claim 1. The secondary reference to Ohno does not cure the argued deficiencies of Akamatsu. Accordingly, the proposed combination of references would not yield the claimed invention. Applicants, therefore, respectfully submit that the imposed rejections of claims 9 and 11 under 35 U.S.C. § 103 for obviousness based upon Akamatsu in view of Ohno is not viable and, hence, solicit withdrawal thereof.

Claim 10 is rejected under 35 U.S.C. § 103 for obviousness based upon Akamatsu in view of Braeckelmann, et al., U.S. Patent No. 5,621,232 (hereinafter Braeckelmann)

On pages four and five of the Office Action, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Akamatsu in view of Braeckelmann to arrive at the claimed. This rejection is respectfully traversed.

Claim 10 depends ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 103 for obviousness based upon Akamatsu. Specifically, Akamatsu fails to teach or suggest that a first insulating film is in contact with a semiconductor substrate, as recited in claim 1. The secondary reference to Braeckelmann does not cure the argued deficiencies of Akamatsu. Accordingly, the proposed combination of references would not yield the claimed invention. Applicants, therefore, respectfully submit that the imposed rejection of claim 10 under 35 U.S.C.

§ 103 for obviousness based upon Akamatsu in view of Braeckelmann is not viable and, hence, solicit withdrawal thereof.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



Scott D. Paul
Registration No. 42,984

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 SDP:kap
Date: May 15, 2003
Facsimile: (202) 756-8087